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## Supplement to

### AN ANNOTATED LIST AND BIBLIOGRAPHY OF INSECTS REPORTED TO HAVE VIRUS DISEASES<sup>1</sup>

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IN 1957 HUGHES (166) laid the basis for the "Annotated List and Bibliography" by cataloguing a series of 259 papers dealing with virus infections of insects. While Hughes' list contains most of the important papers published on insect viruses and virus diseases, it does not include many reports which, even if not dealing primarily with virology or pathology, nonetheless contain valuable information for the insect pathologist. This first supplement adds 473 new references to the 259 already published in Hughes' list. Almost all these papers have been seen in the original or, in a few cases, in photostatic copy of the original (as we are quite adverse to the not uncommon practice of quoting from quotations, thus perpetuating errors). Where the linguistic knowledge of the authors was lacking, translators were consulted; in some cases complete translations were available with the original publication.

The present supplement, as in the list by Hughes, includes only a small proportion of the many papers in Japanese or Russian: those included were available in translation or contained a summary complete enough to derive sufficient information on the type of disease concerned. It is gratifying to know that a similar bibliographical survey is being completed at present in the U.S.S.R. (S. Gershenson, personal communication, 1958).

Titles of Japanese and Russian papers appear in translation only, the translation being that given in the summary of the original publication. Papers in English, French, German, and Italian are entered with their original titles and without translations. Translations and original titles appear for papers in Czech, Polish, and Croatian.

As in Hughes' list, an attempt was made to distinguish between nuclear polyhedrosis and cytoplasmic polyhedrosis whenever the information available permitted such a distinction. Those cases in which a polyhedrosis was involved, but without evidence to indicate the type of polyhedrosis, were recorded simply as "polyhedrosis."

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The sources for scientific and common names are the same as in Hughes' list. The only addition is the work "The North American sawflies of the genera *Acantholyda*, *Cephalcia*, and *Neurotoma* (Hymenoptera, Pamphiliidae)" by W. W. Middlekauff (Univ. Calif. Publ. Ent. 14:51-173; 1957), on which basis the generic name *Cephalcia* was adopted in place of *Cephaeleia*.

The families are arranged alphabetically within the orders. Subgeneric names, where necessary, are in parentheses, after the generic name. In addition to the host list, a general list of references is included in this supplement. Abbreviations of periodicals are those of the "World List of Scientific Periodicals Published in the Years 1900-1950" edited by W. A. Smith, F. L. Kent, and G. B. Stratton (3d ed., Butterworths Scientific Publications, London, xvii-1058 pp.; 1952).

### ACKNOWLEDGMENTS

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### HOST LIST

#### ARACHNIDA ACARINA

"Seta-suppressor substance" (72)

#### TETRANYCHIDAE

*Tetranychus cinnabarinus* (Bdv.)

#### INSECTA LEPIDOPTERA

#### AGROTIDAE

(See PHALAENIDAE)

#### ANTHELIDAE

*Pterolocera amplicornis* Wlk.

Nuclear polyhedrosis (93, 327)

#### ANTHROCERIDAE

(See ZYGAENIDAE)

#### ARCTIIDAE

*Apantesis virgo* (L.)

Polyhedrosis (137)

*Arctia caja* (L.), great tiger moth

Nuclear polyhedrosis (324, 336)

Cytoplasmic polyhedrosis (124, 329, 336, 383)

Polyhedrosis (412)

*Arctia villica* (L.), cream-spot tiger moth

Cytoplasmic polyhedrosis (47, 48, 124, 327, 336)

*Ardices glatignyi* (Le Guill.), woolly bear  
 Nuclear polyhedrosis (364)

*Cycnia mendica* (Clerck), muslin moth  
 Nuclear polyhedrosis (336)

*Diacrisia purpurata* (L.)  
 Cytoplasmic polyhedrosis (336)

*Estigmene acrea* (Drury), salt-marsh caterpillar  
 Granulosis (47, 74)

*Euplagia quadripunctaria* (Poda), Jersey tiger moth  
 Cytoplasmic polyhedrosis (336)

*Hyphantria cunea* (Drury), fall webworm  
 Nuclear polyhedrosis (212, 234, 235, 350)  
 Cytoplasmic polyhedrosis (389)  
 Polyhedrosis (194, 231)  
 Granulosis (196, 314)

*Hypocrita jacobaeae* (L.), cinnabar moth  
 Nuclear polyhedrosis (336)

*Panaxia dominula* (L.), scarlet tiger moth  
 Nuclear polyhedrosis (323, 327, 336, 411, 414)

*Phragmatobia fuliginosa* (L.), ruby tiger moth  
 Cytoplasmic polyhedrosis (336)

## BOMBYCIDAE

### *Bombyx mori* (L.), silkworm

Nuclear polyhedrosis (3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 30, 32, 33, 34, 35, 38, 43, 45, 47, 48, 50, 51, 52, 57, 70, 71, 74, 77, 80, 83, 90, 91, 94, 95, 99, 100, 104, 105, 107, 108, 111, 112, 113, 116, 133, 134, 135, 137, 139, 144, 145, 146, 147, 155, 162, 163, 165, 169, 171, 173, 175, 176, 177, 179, 185, 187, 197, 198, 199, 202, 203, 208, 213, 215, 217, 219, 220, 222, 229, 232, 233, 236, 237, 242, 243, 244, 245, 246, 247, 248, 249, 253, 256, 263, 264, 266, 267, 268, 271, 273, 276, 278, 280, 283, 284, 285, 286, 287, 288, 293, 296, 297, 302, 303, 305, 306, 308, 316, 317, 324, 326, 327, 338, 339, 354, 355, 356, 360, 361, 362, 363, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 387, 393, 396, 398, 401, 402, 403, 408, 410, 414, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473) [Papers 424 and 473 refer to hybrids of *Theophila mandarina* and *Bombyx mori*]

Cytoplasmic polyhedrosis (21, 32, 33, 34, 35, 36, 37, 171, 172, 173, 327, 336)

A poorly defined group of diseases, including those known as flacherie and gattine, believed by Paillot to result from infection by a virus and a bacterium (100, 242, 244, 269, 270, 271, 272, 274, 275, 276, 277, 278, 279, 280, 282, 376)

*Theophila mandarina* Moore, mulberry wild silkworm

Nuclear polyhedrosis (32, 424, 462, 473) [Papers 424 and 473 refer to hybrids of *Theophila mandarina* and *Bombyx mori*]

Cytoplasmic polyhedrosis (32)

## DIOPTIDAE

*Phryganidia californica* Pack., California oakworm

Nuclear polyhedrosis (47, 74, 137, 159, 170, 341)

## DREPANIDAE

*Drepana lacertinaria* (L.)

Cytoplasmic polyhedrosis (329)

## GALLERIIDAE

*Galleria mellonella* (L.), greater wax moth

Nuclear polyhedrosis (383)

“*Galleria*-adapted silkworm jaundice virus” (21)

## GELECHIIDAE

*Recurvaria milleri* Busek, Lodgepole needle miner

Granulosis (347)

## GEOMETRIDAE

*Abraxas grossulariata* (L.), currant moth

Nuclear polyhedrosis (323, 324, 327, 414)

Cytoplasmic polyhedrosis (327)

*Alsophila pometaria* (Harr.), fall cankerworm

Cytoplasmic polyhedrosis (255)

*Bupalus piniarius* (L.)

Cytoplasmic polyhedrosis (325, 328)

Polyhedrosis (109, 181)

Unidentified particles in blood resembling virus inclusion bodies (327)

*Crocallis elinguaria* (L.)

Cytoplasmic polyhedrosis (336)

*Ennomos quercinaria* (Hfn.)

Nuclear polyhedrosis (168)

*Eulype hastata* (L.), spear-marked black moth

Granulosis (343)

*Hibernia defoliaria* (L.)

Nuclear polyhedrosis (124, 205, 207)

*Lambdina fiscellaria fiscellaria* (Guen.), hemlock looper

Polyhedrosis (301)

*Lambdina fiscellaria lugubrosa* (Hulst), western hemlock looper

Nuclear polyhedrosis (291, 310)

*Operophtera brumata* (L.), winter moth

Nuclear polyhedrosis (330)

Cytoplasmic polyhedrosis (255, 325, 328, 330)

*Oporinia autumnata* (Borkh.), larch looper

Nuclear polyhedrosis (124)

*Ourapteryx sambucaria* (L.), swallow tailed moth  
 Cytoplasmic polyhedrosis (336)  
*Sabulodes caberata* Guen., omnivorous looper  
 Granulosis (47, 327)

## LASIOCAMPIDAE

*Dendrolimus pini* L.  
 Polyhedrosis (135)  
*Malacosoma americanum* (F.), eastern tent caterpillar  
 Nuclear polyhedrosis (86, 136, 215, 402, 408)  
 Polyhedrosis (137)  
*Malacosoma californicum* (Pack.), California tent caterpillar  
 Nuclear polyhedrosis (86, 218)  
*Malacosoma constrictum* (Stretch)  
 Nuclear polyhedrosis (86, 218)  
*Malacosoma disstria* Hbn., forest tent caterpillar  
 Nuclear polyhedrosis (51, 80, 86, 215, 291, 340, 365, 402)  
 Polyhedrosis (137, 320)  
*Malacosoma fragile* (Stretch), Great Basin tent caterpillar  
 Nuclear polyhedrosis (86, 340)  
*Malacosoma neustria* (L.)  
 Nuclear polyhedrosis (59, 124, 195)  
 Polyhedrosis (135, 152, 161, 193, 194)  
*Malacosoma pluviale* (Dyar), western tent caterpillar  
 Nuclear polyhedrosis (309)

## LIMACODIDAE

*Natada nararia* (Moore), nettle grub of tea  
 Granulosis (167, 325, 326, 327, 328)

## LYCAENIDAE

*Lycaena phlaeas* (L.), small copper butterfly  
 Cytoplasmic polyhedrosis (336)

## LYMANTRIIDAE

*Dasychira pudibunda* (L.)  
 Cytoplasmic polyhedrosis (124, 206, 208, 214, 317)  
 Polyhedrosis (110)  
*Euproctis chrysorrhoea* (L.), brown-tail moth  
 Nuclear polyhedrosis (124, 205)  
 Polyhedrosis (114, 151, 193, 194)  
*Euproctis flava* (Bremer)  
 Nuclear polyhedrosis (20)  
*Euproctis pseudoconspersa* (Strand)  
 Nuclear polyhedrosis (20)  
*Hemerocampa leucostigma* (J. E. Smith), white-marked tussock moth  
 Nuclear polyhedrosis (142, 143)  
 Polyhedrosis (137)

*Hemerocampa pseudotsugata* McD., Douglas-fir tussock moth  
 Polyhedrosis (291, 311)

*Ivela auripes* (Butler), yellow-legged tussock moth  
 Nuclear polyhedrosis (32)

*Lymantria monacha* (L.), nun moth  
 Nuclear polyhedrosis (47, 57, 74, 76, 77, 103, 124, 137, 160, 182, 184, 185,  
 186, 189, 192, 242, 263, 280, 303, 304, 306, 312, 316, 327, 336, 414)

Cytoplasmic polyhedrosis (164)  
 Polyhedrosis (45, 106, 107, 108, 114, 132, 138, 141, 161, 191, 257, 292, 295,  
 298, 307, 366, 367, 394, 395)

Virus disease, not further identified (160)

*Porthezia dispar* (L.), gypsy moth  
 Nuclear polyhedrosis (47, 48, 51, 57, 74, 77, 124, 136, 137, 139, 183, 185,  
 215, 229, 242, 250, 263, 280, 306, 316, 317, 322, 325, 327, 336, 365, 378,  
 383, 390, 391, 397, 401, 402, 408, 414)

Cytoplasmic polyhedrosis (336, 392)  
 Polyhedrosis (22, 44, 45, 106, 107, 108, 114, 135, 138, 187, 193, 194, 195,  
 196, 298, 299, 313, 338)

*Stilpnotia salicis* (L.) satin moth  
 Nuclear polyhedrosis (124, 401)

## NOCTUIDAE

(See PHALAENIDAE)

## NOTODONTIDAE

*Cerura hermelina* (Goeze)  
 Nuclear polyhedrosis (276)

*Cerura vinula* (L.), puss moth  
 Cytoplasmic polyhedrosis (336)

*Phalera bucephala* (L.), buff tip moth  
 Nuclear polyhedrosis (336)  
 Cytoplasmic polyhedrosis (329, 336)

## NYMPHALIDAE

*Aglais urticae* (L.), small tortoiseshell butterfly  
 Nuclear polyhedrosis (74, 336)  
 Cytoplasmic polyhedrosis (325)  
 Polyhedrosis (135)

*Junonia coenia* Hbn., buckeye  
 Nuclear polyhedrosis (339)  
 Granulosis (47, 74, 339, 341)

*Nymphalis io* (L.), peacock butterfly  
 Nuclear polyhedrosis (336)  
 Polyhedrosis (135)

*Vanessa atalanta* (L.), red-admiral  
 Polyhedrosis (135)

*Vanessa cardui* (L.), painted lady butterfly  
 Nuclear polyhedrosis (41, 256, 325, 328, 330, 336)

Cytoplasmic polyhedrosis (41, 256, 325, 328, 330, 336)

Polyhedrosis (135, 328)

#### OLETHRITIDAE

*Eucosma griseana* (Hbn.), gray larch tortrix, larch bud moth

Polyhedrosis; viral nature of polyhedra not yet established (174, 176, 179, 180, 203)

Granulosis (42, 68, 73, 124, 180, 239, 241)

#### PAPILIONIDAE

*Papilio machaon* L.

Cytoplasmic polyhedrosis (329)

#### PHALAENIDAE

*Agrotis segetum* (Schiff.), turnipmoth or cutworm

Nuclear polyhedrosis (74, 281)

Cytoplasmic polyhedrosis (330)

Granulosis (74)

*Diataraxia oleracea* (L.), tomato moth

Cytoplasmic polyhedrosis (330)

*Euxoa ochrogaster* (Guen.), red-backed cutworm

Granulosis (343)

*Heliothis virescens* (F.), tobacco budworm

Nuclear polyhedrosis (84)

*Heliothis zea* (Boddie), corn earworm, bollworm, tomato fruitworm

Nuclear polyhedrosis (56, 334)

*Lampra fimbriata* (von Schreber), broad-bordered yellow underwing

Cytoplasmic polyhedrosis (336)

*Melanchra persicariae* (L.), dot moth

Granulosis (329, 330)

*Panolis flammea* Schiff., pine moth

Polyhedrosis (109)

*Peridroma margaritosa* (Haw.), variegated cutworm

Nuclear polyhedrosis (339)

Granulosis (47, 74, 167, 327, 337, 339, 341)

*Phlogophora meticulosa* (L.), angle shades moth

Nuclear polyhedrosis (336, 414)

Cytoplasmic polyhedrosis (325, 326, 327, 336)

*Plusia gamma* (L.)

Nuclear polyhedrosis (59, 386)

*Prodenia "litosia"* [This is probably *Prodenia litura* (F.)]

Polyhedrosis (108)

*Prodenia litura* (F.), cotton leafworm

Nuclear polyhedrosis (2, 54)

*Prodenia praefica* Grote, western yellow-striped armyworm

Nuclear polyhedrosis (1, 2, 47, 74, 229)

*Pseudaletia unipuncta* (Haw.), armyworm

Nuclear polyhedrosis (25, 75, 115, 137, 238)

Noninclusion virus disease (327, 330)

*Spaelotis clandestina* (Harr.), W-marked cutworm

Polyhedrosis (137)

*Spodoptera mauritia* (Bdv.), lawn armyworm

Nuclear polyhedrosis (58, 353)

*Trichoplusia ni* (Hbn.), cabbage looper

Nuclear polyhedrosis (137, 157, 230, 318)

*Triphaena pronuba* (L.), yellow underwing

Cytoplasmic polyhedrosis (330)

## PHALONIIDAE

*Clysianna ambiguella* (Hbn.)

Polyhedrosis (108)

## PHYCITIDAE

*Ephestia cautella* (Wlk.), almond moth

Nuclear polyhedrosis (414)

## PIERIDAE

*Aporia crataegi* (L.), black-veined white butterfly

Nuclear polyhedrosis (124, 206, 208, 209, 211, 212, 317)

Polyhedrosis (135, 346)

*Colias philodice eurytheme* Bdv., alfalfa caterpillar

Nuclear polyhedrosis (1, 25, 47, 74, 80, 85, 87, 88, 154, 215, 294, 325, 340, 341, 342, 344, 345, 348, 358, 359, 402, 408, 409)

*Colias philodice philodice* Latr., clouded sulphur butterfly

Polyhedrosis (137)

*Pieris brassicae* (L.), European cabbage butterfly

Granulosis (60, 74, 148, 212, 242, 276, 280, 330, 340)

Possible virus disease with formation of polymorphic inclusion bodies (74, 242, 265, 276, 280, 287)

*Pieris napi* (L.), mustard white

Granulosis (330)

*Pieris rapae* (L.), imported cabbageworm

Polyhedrosis (137)

Granulosis (68, 327, 330, 340, 351)

Virus disease, not further identified (300)

## PSYCHIDAE

*Cryptothela junodi* (Heylaerts), wattle bagworm

Nuclear polyhedrosis (258, 259, 260, 261, 262, 321)

## SATURNIIDAE

*Antheraea paphia mylitta* (Drury)

Cytoplasmic polyhedrosis (331)

*Antheraea pernyi* Guér.-Men., Chinese oak silkworm

Polyhedrosis (135, 293)

*Antheraea polyphemus* (Cram.), polyphemus moth

Nuclear polyhedrosis (323, 324, 336)

*Hemileuca maia* (Drury), buck moth

Polyhedrosis (137)

*Samia cynthia* (Drury), Cynthia moth

- Nuclear polyhedrosis (325, 336)
- Cytoplasmic polyhedrosis (336)
- Polyhedrosis (293)

*Samia ricini* (Bdv.), Arrindy silkorm

- Nuclear polyhedrosis (32, 188, 336)

*Saturnia pyri* (Schiff.)

- Nuclear polyhedrosis (276)

## SATYRIDAE

*Dira megera* (L.), wall butterfly

- Cytoplasmic polyhedrosis (336)

*Pararge aegeria* (L.), speckled wood butterfly

- Cytoplasmic polyhedrosis (336)

## SELIDOSEMIDAE

(See GEOMETRIDAE)

## SPHINGIDAE

*Celerio euphorbiae* (L.), spurge hawk moth

- Polyhedrosis (412)

*Laothoe populi* (L.), poplar hawk moth

- Nuclear polyhedrosis (336)

- Cytoplasmic polyhedrosis (317, 415)

*Smerinthus ocellata atlanticus* Austaut

- Polyhedrosis (108)

*Sphinx ligustri* L., privet hawk moth

- Nuclear polyhedrosis (336)

- Cytoplasmic polyhedrosis (331, 336)

## THAUMETOPOEIDAE

*Thaumetopoea pityocampa* Schiff.

- Nuclear polyhedrosis (59, 61, 149, 376, 388)

- Cytoplasmic polyhedrosis (61, 317, 385, 415)

## TINEIDAE

*Tinea pellionella* (L.), casemaking clothes moth

- Nuclear polyhedrosis (325, 336)

- Cytoplasmic polyhedrosis (325, 336)

*Tineola bisselliella* (Hum.), webbing clothes moth

- Nuclear polyhedrosis (323, 325, 383)

- Cytoplasmic polyhedrosis (323, 325)

- Polyhedrosis (27, 403)

## TORTRICIDAE

(See also OLETHREUTIDAE and PHALONIIDAE)

*Acleris variana* (Fern.), black-headed budworm

- Nuclear polyhedrosis (291)

*Argyrotaenia velutinana* (Wlk.), red-banded leaf roller

- Granulosis (47, 140, 315, 319, 327)

*Cacoecia murinana* (Hbn.), fir shoot roller

Nuclear polyhedrosis (82, 216)

Granulosis (47, 48, 74, 79, 82, 124, 215, 229, 306, 316, 327, 402, 407, 408)

*Choristoneura fumiferana* (Clem.), spruce budworm

Nuclear polyhedrosis (47, 48, 62, 80, 215, 229, 252, 291, 402)

Cytoplasmic polyhedrosis (254)

Granulosis (48, 68, 81, 215, 229, 252)

## ZYGAENIDAE

*Harrisina brillians* B. & McD., western grape leaf skeletonizer

Granulosis (88, 156)

## COLEOPTERA

### SCARABAEIDAE

*Melolontha hippocastani* L.

Virus disease, not further identified (160)

*Melolontha melolontha* L.

Virus disease, not further identified (160)

## HYMENOPTERA

### APIDAE

*Apis mellifera* L., honey bee

"Paralysis," a noninclusion virus disease (251, 330)

Sacbrood, a noninclusion virus disease (74, 131, 137, 242, 330)

Pathogenic drone brood, a possible virus disease of the queen bee, with inclusion bodies (127, 128, 129, 130)

*Diprion (Gilpinia) hercyniae* (Hartig), European spruce sawfly

Nuclear polyhedrosis (39, 40, 41, 52, 64, 65, 66, 69, 81, 96, 117, 120, 124, 291, 327, 340, 348, 357)

*Neodiprion lecontei* (Fitch) red-headed pine sawfly

Nuclear polyhedrosis (66, 291)

*Neodiprion pratti banksianae* Roh., jack-pine sawfly

Nuclear polyhedrosis (66, 67, 291, 340)

*Neodiprion pratti pratti* (Dyar)

Polyhedrosis (44, 97)

*Neodiprion sertifer* (Geoff.), European pine sawfly

Nuclear polyhedrosis (25, 39, 41, 44, 63, 64, 66, 81, 97, 98, 117, 118, 119, 120, 121, 123, 124, 125, 126, 200, 201, 204, 208, 210, 291, 294, 325, 327, 340, 348, 357, 402, 408)

Polyhedrosis (107, 108, 110)

### PAMPHILIIDAE

*Acantholyda (Itycorsia) nemoralis* C. G. Thomson

Virus disease, not further identified (160)

*Cephalcia (Cephalcia) abietis* L.

Polyhedrosis; viral nature of polyhedra not yet established (175, 176, 203, 207)

## TENTHREDINIDAE

*Nematus olfaciens* Benson, black currant sawfly  
Nuclear polyhedrosis (325)

## DIPTERA

## CHIRONOMIDAE

(See TENDIPEDIDAE)

## CULICIDAE

*Anopheles subpictus* Grassi  
A possible virus disease with inclusion bodies (92)

## DROSOPHILIDAE

*Drosophila melanogaster* Meig.  
Virus "σ" (78, 101, 102, 150, 221, 223, 224, 225, 226, 227, 228, 289, 290)

## TENDIPEDIDAE

*Chironomus tentans* F.  
A possible virus disease with inclusion bodies (158, 399)

## TIPULIDAE

*Tipula (Tipula) paludosa* Meig., leatherjacket  
Nuclear polyhedrosis (31, 325, 326, 327, 328, 329, 330, 335)  
*Tipula iridescent virus* (31, 190, 317, 325, 327, 328, 329, 330, 331, 332, 333, 335, 405, 406)

## SUBJECT LIST

Included in this section are reviews on insect viruses as well as papers concerned primarily with the biological, biophysical, and biochemical properties of insect viruses as a group. A large number of these papers are listed also with certain hosts, if the information seems of interest for a particular virus-host system. Since reviews on insect viruses (e.g., 53) usually mention a large number of hosts from the literature, without adding new information, they have not been listed in the host catalogue.

## VIRUSES, INCLUDING THOSE OF INSECTS (Reviews)

24, 229, 306, 316, 317, 326, 328

## INSECT VIRUSES ONLY (Reviews)

46, 51, 53, 137, 178, 242, 276, 280, 292

## TAXONOMY AND NOMENCLATURE

23, 47, 74, 400

## MORPHOLOGY AND DEVELOPMENT

48, 49, 306, 326, 327, 404, 413

**ETIOLOGY**

52, 324, 339, 341, 383, 421

**MICROBIAL CONTROL**

25, 28, 29, 80, 87, 88, 109, 153, 193, 330, 340, 342, 349, 352

**METHODS AND TECHNIQUES**

26, 55, 76, 203, 212, 216, 217, 239, 240, 371, 375, 381

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53, 89, 122, 166, 242

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